Master in Machine Learning, Robotics and Control

Machine learning is at the core of robotic control. As robots interact with their environment, they must continuously learn and adapt their behaviors to achieve desired outcomes.

Advanced algorithms for extracting and processing information are crucial for the continuous development of applications involving intelligent manufacturing systems, advanced robotics, autonomous vehicles, and energy-efficient systems.

Machine Learning (ML) uses algorithms and statistical models to enhance system performance based on data and experience. Robotics involves the design, construction, and operation of robots, while Control Systems focus on manipulating dynamic systems to achieve desired behaviors.When used together, ML enables robots to learn and adapt to varied environments, while control techniques are essential for the stability and precision of robotic movements. Integrating ML with robotic control leads to more autonomous and efficient systems.

The connections between Machine Learning, Robotics, and Control are presented in a master's program through an integrated curriculum that highlights the interdependence and synergies between these fields. Graduates of the programme may also wish to continue to PhD level in this exciting interdisciplinary field of study.

Department of Automatic Control and Applied Informatics

The Department of Automatic Control and Applied Informatics at TUIasi offers an undergraduate programme and hosts opportunities at master's degree and at PhD level. Our industry-focused programs align with the needs of our economy and are renowned for producing one of the most employable graduates in the region.

FULL-TIME

This programme is delivered over two academic years.

Contact us

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These highly skilled graduates are in high demand and significantly contribute to the region's development.Staff in the Department of Automatic Control and Applied Informatics have built an excellent national and international record in applying Machine Learning, Robotics, and Control Systems research in sectors ranging from industry to life science. The National Council of Scientific Research Romania, partners from industry, and the European Commission have provided research funding.

Machine Learning, Robotics and Control (MSc)

This master's degree program offers an in-depth exploration of Machine Learning, Robotics, and Control. The curriculum is designed to cultivate graduates with a specialized skillset in these areas. As a student, you will gain expertise in designing and implementing intelligent systems capable of learning from data, identifying patterns within extensive datasets, and making strategic decisions in complex scenarios involving modern robotic and control systems applications.

Who Should Apply?

Do you thrive on analyzing problems and working with advanced computer systems? Do you enjoy tackling complex challenges and possess strong coding and mathematical abilities, including a solid grasp of statistics? Are you eager to delve into Machine Learning, Data Engineering, Robot Control Systems, Control Systems Engineering, Research Practices, and Ethics? Do you hold an undergraduate degree in Systems Engineering, Computer Science, Electrical Engineering, Electronics, or a related field? If so, the Master of Science program in Machine Learning, Robotics, and Control is tailored for you. We assume you have already attended a control systems course, are proficient in programming, and can code effectively using modern high-level languages.

Programme Structure

The program offers stimulating and engaging modules led by lecturers who are authorities in Machine Learning, Robotics, and Control. Additionally, you can engage in research case studies aligned with the department's expertise. The program emphasizes experiential learning, providing a practical, hands-on approach to education.

All modules are thoroughly assessed using continuous evaluation methods and traditional end-of-semester written exams. This ensures that you learn through active participation from the beginning to the end of the program. Spanning 120 credits, the program is divided into four 30 credit semesters, each comprising mandatory modules and a selection of electives.

Semester 1	Type
Research and Practice	Mandatory
Machine Learning	Mandatory
Embedded Systems	Mandatory
Agile Software Development	Mandatory
Bond Graph Language in Physical Modeling	Mandatory

Semester 2	Type
Research and practice	Mandatory
Knowledge Representation and Reasoning	Elective
Intelligent Systems	Mandatory
Complex Dynamical Systems Analysis and Control	Mandatory
Mobile Robots Path Planning Project	Mandatory
High Level MATLAB Applications for Systems and Control	Elective
Ethics in Artificial Intelligence and Professional Integrity	Mandatory

Semester 3	Type
Research and Practice	Mandatory
Modeling and Predictive Control	Mandatory
Machine Vision	Elective
Fault Diagnosis	Elective
Intelligent Robotic Systems - Modeling and Control Project	Mandatory
Advanced Communications in Control Systems – Project	Mandatory

Semester 4	Type
Research and Practice	Mandatory
Practice for Master's Thesis	Mandatory

Admission information at
https://ac.tuiasi.ro/admitere/masterat/